

AMENDMENTS TO THE CLAIMS

Claim 14 (Withdrawn) A substrate polishing apparatus comprising:

- a polishing table having a polishing surface;
- a top ring for holding a substrate, wherein a semiconductor substrate held by said top ring is pressed against said polishing surface and a surface to be polished of the semiconductor substrate is polished by relative movement between the semiconductor substrate and said polishing surface;
- a pressing force changing mechanism for changing a pressing force pressing the semiconductor substrate against said polishing surface;
- a relative movement speed changing mechanism for changing speed of relative movement between said top ring and said polishing table;
- a film thickness detector including an eddy current monitor for detecting a film thickness of the semiconductor substrate with the eddy current monitor; and
- a control mechanism operable to control plural polishing processes on said polishing surface of said polishing table while changing the pressing force and the relative movement speed through said pressing force changing mechanism and said relative movement speed changing mechanism and operable to control change from a preceding polishing process to a next polishing process on the basis of a film thickness detection signal from said film thickness detector.

Claim 15 (Withdrawn) The substrate polishing apparatus of claim 14, and further comprising one of a dresser for dressing said polishing surface of said polishing table and a cleaner for cleaning said polishing surface of said polishing table, wherein said control mechanism is operable to control said dresser or said cleaner between the polishing processes to effect dressing or cleaning of said polishing surface of said polishing table.

Claim 16 (Currently Amended) A method of polishing a substrate having a first metal layer and a second metal layer formed under the first metal layer, comprising:

- moving the substrate from a load/unload portion of a polishing apparatus to a polishing section of the polishing apparatus;

polishing the first metal layer using a polishing surface and a first polishing fluid in the polishing section, said polishing the first metal layer comprising a first polishing process and a second polishing process, wherein a load on the substrate during said second polishing process is lower than a load during said first polishing process;

detecting a polishing end point of the first metal layer during said second polishing process the first metal layer using an end point monitor disposed within a polishing table that comprises the polishing surface, the polishing table being disposed within the polishing section of the polishing apparatus;

cleaning the polishing surface by supplying water for removing the first polishing fluid on the polishing surface after the end point monitor has detected the end point of said polishing the first metal layer;

polishing the second metal layer after said cleaning the polishing surface using the polishing surface and a second polishing fluid;

detecting a polishing end point of the second metal layer with an optical film thickness monitor disposed within the polishing table during said polishing the second metal layer;

moving the substrate from the polishing section to a cleaning machine in the polishing apparatus after said detecting a polishing end point of the second metal layer;

cleaning the substrate after said polishing the second metal layer with the cleaning machine;

drying the substrate after said cleaning the substrate;

moving the substrate after said drying to a dried condition film thickness measuring device disposed outside of the polishing section;

measuring a film thickness of the substrate after said drying using the dried condition film thickness measuring device, wherein the dried condition film thickness measuring device stores the film thickness of the substrate; and

moving the substrate from the dried condition film thickness measuring device to the load/unload portion.

Claim 17 (Canceled)

Claim 18 (Currently Amended) The method of claim 16, wherein the second metal layer of the substrate is pressed against the polishing surface by a load which is ~~smaller than a load when~~ ~~polishing the first metal layer~~ ~~the same as the load at said second polishing process.~~

Claim 19 (Canceled)

Claim 20 (Currently Amended) The method of claim-16_18, wherein the first and second polishing fluids have a pH at the same side of pH 7.

Claims 21-22 (Canceled)

Claim 23 (Currently Amended) A method of polishing a substrate having a first metal layer and a second metal layer formed under the first metal layer, comprising:

moving the substrate from a load/unload portion of a polishing apparatus to a polishing section of the polishing apparatus;

polishing the first metal layer using a polishing surface and a first polishing fluid in the polishing section, said polishing the first metal layer comprising a first polishing process and a second polishing process, wherein a load on the substrate during said second polishing process is lower than a load during said first polishing process;

detecting a polishing end point of the first metal layer during said second polishing process ~~the first metal layer~~ using an end point monitor disposed within a polishing table that comprises the polishing surface, the polishing table being disposed within the polishing section of the polishing apparatus;

cleaning the polishing surface by supplying water for removing the first polishing fluid on the polishing surface after the end point monitor has detected the end point of said polishing the first metal layer;

polishing the second metal layer after said cleaning the polishing surface using the polishing surface and a second polishing fluid;

detecting a polishing end point of the second metal layer with an optical film thickness monitor disposed within the polishing table during said polishing the second metal layer;

moving the substrate from the polishing section to a cleaning machine in the polishing apparatus after said detecting a polishing end point of the second metal layer;

cleaning the substrate after said polishing the second metal layer with the cleaning machine;

drying the substrate after said cleaning the substrate;

moving the substrate after said drying to a dried condition film thickness measuring device disposed outside of the polishing section;

measuring a film thickness of the substrate after said drying using the dried condition film thickness measuring device, wherein the dried condition film thickness measuring device judges whether the substrate is transferred to a subsequent process; and

moving the substrate from the dried condition film thickness measuring device to the load/unload portion.

Claim 24 (Canceled)

Claim 25 (Currently Amended) The method of claim 23, wherein the second metal layer of the substrate is pressed against the polishing surface by a load which is ~~smaller than a load when polishing the first metal layer~~ the same as the load at said second polishing process.

Claim 26 (Canceled)

Claim 27 (Previously Presented) The method of claim-23_25, wherein the first and second polishing fluids have a pH at the same side of pH 7.

Claims 28-40 (Canceled)

Claim 41 (Currently Amended) A method of polishing a substrate having a first metal layer and a second metal layer formed under the first metal layer, comprising:

moving the substrate from a load/unload portion of a polishing apparatus to a polishing section of the polishing apparatus;

polishing the first metal layer using a polishing surface and a first polishing fluid in the polishing section, said polishing the first metal layer comprising a first polishing process and a second polishing process, wherein a load on the substrate during said second polishing process is lower than a load during said first polishing process;

detecting a polishing end point of the first metal layer during said second polishing process the first metal layer using an end point monitor disposed within a polishing table that comprises the polishing surface, the polishing table being disposed within the polishing section of the polishing apparatus;

cleaning the polishing surface by supplying water for removing the first polishing fluid on the polishing surface after the end point monitor has detected the end point of said polishing the first metal layer;

polishing the second metal layer after said cleaning the polishing surface using the polishing surface and a second polishing fluid;

detecting a polishing end point of the second metal layer with an optical film thickness monitor disposed within the polishing table during said polishing the second metal layer;

moving the substrate from the polishing section to a cleaning machine in the polishing apparatus;

cleaning the substrate after said polishing the second metal layer with the cleaning machine;

drying the substrate after said cleaning the substrate;

moving the substrate after said drying to a dried condition film thickness measuring device disposed outside of the polishing section after said detecting a polishing end point of the second metal layer;

measuring a film thickness of the substrate after said drying using the dried condition film thickness measuring device when it is decided to measure the substrate with the dried condition film

thickness device, wherein the dried condition film thickness measuring device stores the film thickness of the substrate; and

moving the substrate from the dried condition film thickness measuring device to the load/unload portion.